HP Virtual Connect Manager Command Line Interface User Guide

Version 1.20

Audience assumptions

This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

Contents

Introduction

Virtual Connect overview

Virtual Connect is a set of interconnect modules and embedded software for HP BladeSystem c-Class enclosures that simplifies the setup and administration of server connections. HP Virtual Connect includes the HP 1/10Gb Virtual Connect Ethernet Module for c-Class BladeSystem, the HP 4Gb Virtual Connect Fibre Channel Module for c-Class BladeSystem, and the HP Virtual Connect Manager.

Virtual Connect implements server edge virtualization so that server administrators can upgrade, replace, or move server blades within their enclosures without changes being visible to the external LAN and SAN environments.

The Virtual Connect Manager is embedded on the HP 1/10Gb Virtual Connect Ethernet Module for c-Class BladeSystem and is accessed by users through web links provided by the Onboard Administrator or through direct connection to the embedded web server.

The HP 1/10Gb VC-Enet Module supports the HP BladeSystem c7000 Enclosure, HP BladeSystem c3000 Enclosure, and all the server blades and networks contained within the enclosure and enables connection to all brands of data center Ethernet switches.

The HP 4Gb VC-FC Module enables connection of the enclosure to Brocade, Cisco, McData, or Qlogic data center Fibre Channel switches, but does not appear as a switch to the Fibre Channel fabric.

A Virtual Connect domain currently includes a single HP c-Class BladeSystem enclosure for a total of 16 servers. Within the domain, any server blade can access any LAN or SAN connected to a VC module, and a server blade can be used as a spare for any server blade within the same enclosure.

By stacking (cabling) the Ethernet modules within the domain, every server blade in the domain can be configured to access any external network connection. Fibre Channel modules within different I/O bays are each connected directly to the same set of FC SAN(s). With this configuration, the Virtual Connect Manager can deploy and migrate a server blade profile to any server in the Virtual Connect domain without the need to change external LAN or SAN configurations.

Command line overview

The CLI can be used as an alternative method for managing the Virtual Connect Manager. Using the CLI can be useful in the following scenarios:

- HP Management Applications (for example: Systems Insight Manager or Insight Control tools) can query the Virtual Connect Manager for information these tools need to present a complete management view of HP BladeSystem enclosures and the devices contained within. This interface is also used by the Management tools to execute provisioning and configuration tasks to devices within the enclosure.

- Users can develop tools that utilize Virtual Connect Manager functions for data collection and for executing provisioning and configuration tasks.

- When no browser is available or you prefer to use a command line interface, you can access management data and perform configuration tasks.

Command line syntax

CLI input is case-insensitive except when otherwise noted. The general CLI syntax format is as follows:

```
<subcommand> <managed element> <parameters> [<options>] [<properties>]
```

Item	Description
subcommand	Operation performed on a managed element
managed element	Management entity being operated on
parameters	Command extensions for a particular management operation
options	Attributes used to customize or control command execution behavior such as output format, quiet-mode, and others
properties	One or more name or value pairs that are accessories to the command operation, mainly for set and add operations

Example: `->add user mark password=asdf89g fullname="Mark Smith" enabled=true`

In the above example, `add` is the subcommand, `user` is the managed element, `mark` is a required parameter for the operation, `password` is a required property, and `fullname` and `enabled` are optional properties.

Depending on the specific command being executed, certain parameters or properties might be required. For example, when adding a new user, both a parameter representing the user name, as well as a password (in the form of a property) are required to be specified. All other user properties are optional at the time the user is added. In general, the properties are in the format `name=value`, and more than one property is separated by a space.

Parameters

Parameters are command extensions that provide extra information needed for the execution of a particular command. Whether or not a parameter is required depends on the specific command being executed. For example, the `show user` command has an optional parameter, which represents the user name if the user instance is being managed. If `show user` is entered, then a summary listing of all users is shown. However, if the optional parameter (`user name`) is provided, only a single user instance is displayed, for example, `show user paul`.

Some commands require that a parameter be specified, for example, the `add user` command. The required parameter is the user name (`add user jake`), and if the username is not provided, an error message displays indicating that a required parameter is missing.

Options

Options enable users to control certain behavior characteristics available during the command execution. Some examples of options include controlling output format and specifying a `quiet` mode for suppressing interactive prompts that would normally require input from the user.

Options are distinguished from other command line elements by using a hyphen (-) in front of the option. Option arguments are required or optional depending on the option being specified. For example, the –

`output` option requires an argument, which is a list of one or more output format attributes. However, the `-quiet` option does not require any arguments to be specified.

The general format of a CLI option is as follows:

```
-<option>[=argument1>,<argument2>, . . .]
```

Example: `->show user suzi -output=script1`

In the example, `-output` is the option, and `script1` is an option argument.

Properties

Properties are specific configuration attributes of a managed element. Properties are commonly used during `set` operations or `add` operations where a managed element is being modified or created. In some limited circumstances, properties might also be used as a part of a `show` or other command.

IMPORTANT: If a property value contains embedded spaces, then the entire property value must be contained within single or double quotes. Likewise, if a double quote is part of a property value, it should be contained within single quotes, and if a single quote is part of a property value, it should be contained within double quotes.

CLI command execution modes

The Virtual Connect Manager CLI provides two different methods for executing commands: interactive shell mode and non-interactive mode.

Interactive Shell Mode

This mode is used to invoke CLI command operations using the dedicated management shell. The shell is provided after the user logs in with valid credentials, and only accepts known VCM CLI commands as input. Users can quit the shell by using the `exit` command. An example of logging into the interactive management shell is provided below. In the example, the primary VCM is located at IP address 192.168.0.120.

```
>ssh 192.168.0.120

login as: michael
password: ***********

-----------------------------------------------------------------------
HP Virtual Connect Management CLI v1.20
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-----------------------------------------------------------------------

GETTING STARTED:

help          : displays a list of available subcommands
exit          : quits the command shell
<subcommand> ? : displays a list of managed elements for a subcommand
<subcommand> <managed element> ? : displays detailed help for a command
```

```
->
```

Non-Interactive Mode

In some cases, users might want to write automated scripts that execute a single command at a time. These scripts can be used to batch several commands in a single script file from the SSH client. An example of how to use the non-interactive mode for CLI command execution is provided below. In the example, the primary VCM is located at IP address 192.168.0.120.

> **IMPORTANT:** To suppress prompting for a password during login, you must first setup the SSH encryption keys using the VCM Web GUI, and configure your SSH client properly with the keys. For additional information on configuring the SSH keys, see the *HP Virtual Connect for c-Class BladeSystem User Guide.*

```
->ssh Administrator@192.160.0.120 show enclosure
<command output displayed to console>
```

Remote access to the Virtual Connect Manager

The Virtual Connect Manager CLI can be accessed remotely through any SSH session:

1. Start an SSH session to the Virtual Connect Manager using any SSH client application.
2. When prompted, type the assigned IP address or DNS name of the Virtual Connect Manager, and then press **Enter.**
3. Type a valid user name, and then press **Enter.**
4. Type a valid password, and then press **Enter.** The CLI command prompt displays.
5. Enter commands for the Virtual Connect Manager.
6. To terminate the remote access SSH session, close the communication software or enter `exit` at the CLI command prompt.

Command line

Subcommands

Command	Description
add	Add a new object to the domain or to another object
assign	Assign a server profile to a server bay
delete	Delete the Virtual Connect domain configuration
exit	Exit the Virtual Connect Manager command-line shell
help	Display help for a command or object
import	Import an enclosure into the domain
poweroff	Power off one or more servers
poweron	Power on one or more servers
reboot	Reboot one or more servers
remove	Remove or delete an existing object (for example, users or profiles)
reset	Reset one or more servers or other objects
set	Modify one or more configuration properties of an object
show	Display properties or information about an object
unassign	Unassign a server profile from a device bay
update	Update firmware on one or more interconnect modules

Managed elements

Managed element	Description
devicebay (on page 10)	Display general enclosure device bay settings and information
domain (on page 10)	Manage general Virtual Connect domain settings and information
enclosure (on page 12)	Manage general enclosure settings and information
enet-connection (on page 13)	Manage Ethernet network connections
external-manager (on page 15)	Manage external settings and information
fabric (on page 16)	Manage FC SAN fabrics
fc-connection (on page 17)	Manage Fibre Channel SAN fabric connections
firmware (on page 18)	Manage interconnect module firmware
igmp (on page 19)	Ethernet IGMP Snooping settings
interconnect (on page 19)	Manage I/O interconnect modules
ldap (on page 20)	Manage LDAP configuration settings

Managed element	Description
ldap-group (on page 21)	Manage LDAP group configuration settings
mac-cache (on page 22)	Manage Ethernet MAC cache failover settings
network (on page 23)	Manage Virtual Connect Ethernet networks
profile (on page 24)	Manage VC server profiles
server (on page 26)	Manage server blades in the enclosure device bays
stackinglink (on page 28)	Display stacking link information and status
status (on page 29)	Display overall domain status information
systemlog (on page 29)	Display Virtual Connect Manager system event log
uplinkport (on page 29)	Manage interconnect module uplink ports
uplinkset (on page 31)	Manage shared uplink port sets
user (on page 32)	Manage local domain user configurations
vcm (on page 34)	Reset the Virtual Connect Manager that manages the domain
version (on page 34)	Display CLI version information

The following sections provide detailed information on how the subcommands are used with each managed element.

To display command help, type a command followed by ? or -help. For additional information on the help subcommand, see "Help subsystem (on page 34)."

devicebay

Manage general enclosure device bay settings and information.

Supported actions: help, show

Item	Description
show devicebay	Display all device bays in the domain
Syntax	show devicebay [<DeviceBayID>|*]
Parameters:	
DeviceBayID	The reference ID of a device bay in the domain
	The format of the device bay name is <EnclosureID:DeviceBay>
	When Enclosure ID is not specified, it defaults to the local enclosure
Examples:	
	->show devicebay Displays a summary listing of all device bays
	->show devicebay * Displays detailed information for all device bays
	->show devicebay enc0:2 Displays detailed information for a specific device bay of a specific enclosure

domain

Manage general Virtual Connect domain settings and information.

Supported actions: `delete, help, set, show`

Item	Description
`delete domain`	Delete the existing Virtual Connect domain configuration.
	Deleting the domain removes the entire Virtual Connect domain configuration and resets it back to the original defaults. After the domain has been deleted, you are logged out and the Virtual Connect Manager resets.
Syntax	`delete domain [-quiet]`
Examples:	
	`->delete domain`
	Deletes the Virtual Connect domain configuration and prompts for user confirmation
	`->delete domain -quiet`
	Deletes the Virtual Connect domain quietly without prompting for user confirmation (primarily used in automated scripting scenarios)

Item	Description
`set domain`	Modify domain configuration properties
Syntax	`set domain [Name=<NewName>] [DomainIp=<Enabled|Disabled>] [IpAddress=<IPAddress>] [SubnetMask=<mask>] [Gateway=<Gateway>] [MacType=<VC-Defined|Factory-Default| User-Defined>] [MacPool=<1-64>] [MacStart=<address>] [MacEnd=<address>] [WwnType=< VC-Defined|Factory-Default>] [WwnPool=<1-64>]`
Properties:	
`Name`	The new name of the domain. Valid characters include alphanumeric, "_", and ".". The maximum length of the name is 64 characters.
`DomainIP`	Enables or disables the Virtual Connect domain IP address. If enabled, then a valid IP address subnet mask must be configured. If disabled, then DHCP is used to obtain a valid IP address.
	Enabling domain IP address configuration, or changing the domain IP address can cause a temporary loss of connectivity to the Virtual Connect Manager. Use caution when changing these settings.
`IpAddress`	A valid IP address to use for the domain IP address configuration
`SubnetMask`	A valid subnet mask for the domain IP address configuration
`Gateway`	A valid gateway address for the domain IP address configuration
`MacType`	The type of MAC address source to use for assignment. Valid values include VC-Defined, Factory-Default, and User-Defined
`MacPool`	The pre-defined MAC pool to use for address assignment. Valid values include integers 1-64. This property is only valid if the MacType is set to "VC-Defined". If not specified, the default pool ID is 1.
`MacStart`	The starting MAC address in a custom user-defined range. This property is only valid if the MacType is set to "User-Defined".
`MacEnd`	The ending MAC address in a custom user-defined range. This property is only valid if the MacType is set to "User-Defined".
`WwnType`	The type of WWN address source to use for assignment. Valid values include VC-Defined and Factory-Default.

Item	Description
WwnPool	The pre-defined WWN pool to use for address assignment. Valid values include integers 1-64. This property is only valid if the WwnType is set to "VC-Defined". If not specified, the default pool ID is 1.
Examples:	
	`->set domain Name=MyNewDomainName` Changes the name of the Virtual Connect domain
	`->set domain DomainIp=Enabled` Enables the domain IP address

	`->set domain DomainIp=Enabled IpAddress=192.168.0.120`
	`SubnetMask=255.255.255.0 Gateway=192.168.0.1`
	Configures the domain IP address and enables it

	`->set domain DomainIp=Disabled` Disables the domain IP address and uses DHCP instead
	`->set domain MacType=VC-Defined MacPool=10` Sets the MAC address source to VC-Defined with a pre-defined range
	`->set domain MacType=Factory-Default` Set the MAC address source to use factory default MAC addresses

	`->set domain MacType=User-Defined MacStart=00-17-A4-77-00-`
	`00 MacEnd=00-17-A4-77-00-FF`
	Sets the MAC address source to a custom, user-defined address range

	`->set domain WwnType=VC-Defined WwnPool=5` Sets the WWN address source to VC-Defined with a pre-defined range
	`->set domain WwnType=Factory-Default` Sets the WWN address source to use factory default WWN addresses

Item	Description
show domain	Display general Virtual Connect domain information, such as the Virtual Connect domain name and the VCM domain IP address settings
Syntax	`show domain [addressPool]`
Examples:	
	`->show domain` Displays domain information
	`->show domain addressPool` Displays the VC defined address pools for the domain

enclosure

Manage general enclosure settings and information.

Supported actions: `help, import, show`

Item	Description
import enclosure	Import an enclosure into the domain

Item	Description
Syntax	`import enclosure UserName=<username> Password=<password>` The password field is optional on the command line. If not specified on the command line, the user is prompted for the same interactively.
Properties:	
`UserName`	A valid user name of the Onboard Administrator user
`Password`	A valid password of the Onboard Administrator user
Example	`->import enclosure UserName=Administrator Password=fgg7h*1` Imports the local enclosure

Item	Description
`show enclosure`	Display all enclosures in the domain
Syntax	`show enclosure [<EnclosureID>|*]`
Parameters:	
`EnclosureID`	The ID of an enclosure in the domain
Examples:	
	`->show enclosure` Displays a summary listing of all enclosures
	`->show enclosure *` Displays detailed information for all enclosures
	`->show enclosure enc0` Displays detailed information for a specific enclosure

enet-connection

Manage Ethernet network connections.

Supported actions: `add, help, remove, set`

Item	Description
`add enet-connection`	Add a new Ethernet network connection to an existing server profile
Syntax	`add enet-connection <ProfileName> [Network=<NetworkName>] [PXE=<enabled|disabled|UseBios>] [AddressType=<Vc-Defined|Factory-Default|User-Defined>] [EthernetMAC=<MAC Address> iScsiMAC=<MAC Address>]`
Parameters:	
`ProfileName`	The name of an existing profile to which the new connection is added. (required)
Properties:	
`Network`	The name of an existing network to associate with the connection. If the network name is not specified, or is set to "unassigned," then the network remains unassigned. (optional)

Item	Description
PXE	Enables or disabled PXE on the network connection. Valid values are enabled, disabled, and UseBios. If this value is not specified, the default is "UseBios."
	Only one connection can have PXE enabled per profile.
AddressType	The source of MAC address assignments to be used during the creation of the new connection. If not specified, the default is the domain default. If "User-Defined" is specified, then both an Ethernet MAC Address and iSCSI MAC Address must also be specified. Valid values include Vc-Defined, Factory-Default, and User-Defined.
EthernetMAC	The user-defined Ethernet MAC address to use for the connection. This property is required if the AddressType specified is "User-Defined."
iScsiMAC	The user-defined iSCSI MAC address to use for the connection. This property is required if the AddressType specified is "User-Defined."
Examples:	
	`->add enet-connection MyNewProfile Network=SomeNetwork`
	Adds a new Ethernet network connection to a profile
	`->add enet-connection MyNewProfile Network=SomeNetwork2 PXE=enabled`
	Adds a new Ethernet network connection and enables PXE
	`->add enet-connection MyNewProfile`
	Adds a new Ethernet network connection and leaves the network unassigned
	`->add enet-connection MyNewProfile AddressType=Factory-Default`
	Adds a new Ethernet network connection and uses factory default addresses
	`->add enet-connection MyNewProfile AddressType=Vc-Defined`
	Adds a new Ethernet network connection using VC-defined addresses
	`->add enet-connection MyNewProfile AddressType=User-Defined EthernetMAC=00-17-A4-77-00-00 iScsiMAC=00-17-A4-77-00-01`
	Adds a new Ethernet network connection and provides user-defined MAC addresses

Item	Description
set enet-connection	Modify an existing server profile connection

Syntax	`set enet-connection <ProfileName> <Port>`
	`[Network=<NetworkName>]`
	`[PXE=<enabled|disabled|UseBios>]`

Parameters:	
ProfileName	The name of the server profile that contains the connection to modify
Port	The port number of the connection being modified
Properties:	
NetworkName	The name of the Ethernet network to associate with the connection. Applies to Ethernet network connections only.

Item	Description
PXE	Enables or disables PXE on a connection. Valid values are enabled, disabled, and UseBios. Applies to Ethernet network connections only. PXE can be enabled on one connection per profile.
Examples:	

	`->set enet-connection MyProfile 2`
	`NetworkName=NewNetworkName`
	
	 Changes the network of an Ethernet connection

	`->set enet-connection RedProfile 1 NetworkName=""` Sets a network connection to "unassigned"
	`->set enet-connection GreenProfile 3 PXE=disabled` Disables PXE on an Ethernet connection

external-manager

Manage external manager settings and information.

Supported actions: `delete, help, set, show`

Item	Description
`show external-` `manager`	Display the information of an existing external manager
Syntax	`show external-manager`
Examples:	
	`->show external-manager` Displays the information of an existing external manager.
	`->show external-manager` Displays the information of an existing external manager in the specified output format.
	`->show external-manager` Displays the information of an existing external manager in the specified output format.

Item	Description
`remove external-` `manager`	Remove an existing manager and regain control of the VC Manager
Syntax	`remove external-manager UserName=<username>`
Properties:	
`UserName`	A valid external manager user name
Example	`->remove external-manager UserName=<username>` Removes external management control of the VC Manager

Item	Description
`set external-` `manager`	Modify external manager configuration properties
Syntax	`set external-manager UserName=<username>` `Enabled=<true|false>`

Item	Description
Examples:	
	->set external-manager UserName=steve Enabled=false
	Disables the external manager
	->set external-manager UserName=steve Enabled=true
	Enables the external manager

fabric

Manage Fibre Channel SAN fabrics.

Support actions: `help, set, show`

Item	Description
`set fabric`	Modify an existing FC SAN fabric
Syntax	`set fabric <FabricName> [Name=<NewName>] [NumPorts=<1|2|4>] [PortSpeed=<Auto|2Gb|4Gb>]`
Parameters:	
`FabricName`	The name of an existing FC SAN fabric to modify (required)
Properties:	
`Name`	The new name of the fabric
`NumPorts`	The number of uplink ports to use for the fabric
`PortSpeed`	The port speed for the uplink ports in the fabric
Examples:	
	->set fabric MyFabric NumPorts=2
	Changes the number of ports used by the fabric
	->set fabric Blue Name=Red
	Changes the name of an existing fabric from "Blue" to "Red"
	->set fabric GreenFabric PortSpeed=4Gb
	Changes the port speed of the uplinks in a fabric

Item	Description
`show fabric`	Display all FC SAN fabrics
Syntax	`show fabric [<FabricName>	*]`
Examples:	
	->show fabric
	Displays a summary listing of all FC SAN fabrics
	->show fabric *
	Displays detailed information for all FC SAN fabrics
	->show fabric SAN_5
	Displays detailed information for a specific FC SAN fabric

fc-connection

Manage Fibre Channel SAN fabric connections.

Supported actions: `add, help, set`

Item	Description
`add fc-connection`	Add a new FC SAN connection to an existing server profile
Syntax	`add fc-connection <ProfileName> [Fabric=<FabricName>] [Speed=<Auto|2Gb|4Gb|Disabled>]`
Parameters:	
`ProfileName`	The name of an existing profile to which the new connection is added. (required)
Properties:	
`Fabric`	The name of an existing fabric to associate with the connection. If the fabric name is not specified, it will be assigned to the next available SAN Fabric.
`Speed`	The port speed of the connection port. Valid values include Auto, 2Gb, 4Gb, and Disabled. If not specified, then the default port speed is set to "Auto".
`AddressType`	The source of WWN address assignments to be used during the creation of the new connection. If not specified, the default is the domain default. If "UserDefined" is specified, then both a Port WWN and Node WWN must also be specified. Valid values include Vc-Defined, Factory-Default, and User-Defined.
`PortWWN`	The user-defined Port WWN address to use for the connection. This property is required if the AddressType specified is "User-Defined".
`NodeWWN`	The user-defined Node WWN address to use for the connection. This property is required if the AddressType specified is "User-Defined".
Examples:	
	`->add fc-connection MyNewProfile Fabric=SAN_5` Adds a new FC SAN fabric connection to a profile
	`->add fc-connection MyNewProfile Fabric=SomeFabric Speed=4Gb` Adds a new FC SAN connection and configures the port speed
	`->add fc-connection MyNewProfile` Adds a new FC SAN connection and uses the next available fabric
	`->add fc-connection MyNewProfile AddressType=Factory-Default` Adds a new FC SAN connection and uses factory-default addresses
	`->add fc-connection MyNewProfile AddressType=Vc-Defined` Adds a new FC SAN connection and uses VC-defined addresses
	`->add fc-connection MyNewProfile AddressType=User-Defined PortWWN=50:06:0B:00:00:C2:62:00 NodeWWN=50:06:0B:00:00:C2:62:00` Adds a new FC SAN connection and provides user-defined WWN addresses

Item	Description
`set fc-connection`	Modify an existing server profile connection

Item	Description
Syntax	`set fc-connection <ProfileName> <Port> [Fabric=<FabricName>] [Speed=<Auto|2Gb|4Gb|Disabled>] [BootPriority=<priority>] [BootPort=<portName>] [BootLun=<LUN>]`
Parameters:	
`ProfileName`	The name of the server profile that contains the connection to modify
`Port`	The port number of the connection being modified
Properties:	
`Fabric`	The name of the FC SAN fabric to associate with the connection
`Speed`	The port speed of the FC SAN connection. Valid values include Auto, 4Gb, 2Gb, and Disabled
`BootPriority`	Controls whether the FC HBA port is enabled for SAN boot and will affect the BIOS boot order. Valid values include BIOS, Primary, Secondary, Disabled
`BootPort`	The target WWPN of the controller interface on the Fibre Channel storage target. The port name is a 64-bit identifier in the format: NN:NN:NN:NN:NN:NN:NN:NN, where N is a hexadecimal number
`BootLun`	The LUN of the volume used for SAN boot. Valid values include an integer from 0-255.
Examples:	
	`->set fc-connection MyProfile 1 Fabric=SAN_5` Changes the fabric of an FC SAN fabric connection
	`->set fc-connection RedProfile 2 Fabric=""` Sets a FC SAN fabric connection to "Unassigned"
	`->set fc-connection BlueProfile 1 Fabric=SAN_7` Changes the FC SAN Fabric of an FC SAN connection
	`->set fc-connection BlueProfile 1 Speed=4Gb` Changes the port speed of a FC SAN connection
	`->set fc-connection BlueProfile 1 BootPriority=Primary BootPort=50:06:0B:00:00:C2:62:00 BootLun=5` Changes the SAN boot priority and sets additional boot parameters

firmware

Display or update Virtual Connection firmware version.

Support actions: `help, show, update`

Item	Description
`show firmware`	Display current version of firmware of all interconnect modules in the domain
Syntax	`show firmware`
Examples:	
	`->show firmware` Displays current version of the firmware

Item	Description
update firmware	Update the firmware on all Virtual Connect modules in the domain
Syntax	`update firmware url=<firmware image address>`
Example	`->update firmware url=http://www.myserver.com/fw/vc-1.20.rom` Updates the firmware on all Virtual Connect modules in the domain

igmp

Manage Ethernet IGMP Snooping settings.

Supported actions: `help, set, show`

Item	Description
set igmp	Modify Ethernet IGMP Snooping settings
Syntax	`set igmp [Enabled=<true|false>] [Timeout=<interval>]`
Properties:	
Enabled	Enables or disables IGMP Snooping. Valid values include "true" and "false".
Timeout	The idle timeout interval (in seconds) for IGMP Snooping. Valid values include integers from 1-3600. The default IGMP idle timeout is 260 seconds.
Examples:	
	`->set igmp Enabled=true` Enables IGMP Snooping
	`->set igmp Enabled=true Timeout=30` Enables IGMP Snooping and sets the idle timeout

Item	Description
show igmp	Display Ethernet IGMP Snooping settings
Syntax	`show igmp`
Example	`->show igmp` Displays IGMP Snooping settings

interconnect

Manage I/O interconnect modules.

Supported actions: `help, remove, show`

Item	Description
remove interconnect	Remove a module from the domain that has physically been removed from an enclosure
Syntax	`remove interconnect <ModuleID|*>`
Parameters:	
ModuleID	The ID of the module to remove. The ID is in the format `<EnclosureID>:<BayNumber>`
Examples:	

Item	Description
	`->remove interconnect enc0:2` Removes a specific interconnect module (bay 2) from the domain
	`->remove interconnect *` Removes all interconnect modules from the domain that are not physically present in any enclosures
	`->remove interconnect enc0:*` Remove all interconnect modules that are not physically present in a specific enclosure

Item	Description
`show interconnect`	Display all interconnect modules known to the domain
Syntax	`show interconnect [ModuleID|*]`
Examples:	
	`->show interconnect` Displays a summary listing of all interconnect modules
	`->show interconnect *` Displays detailed information for all interconnect modules
	`->show interconnect *:5` Displays the detailed information for all enclosures with interconnect modules in interconnect bay number 5
	`->show interconnect enc0:*` Displays interconnect modules in all bays of a specific enclosure
	`->show interconnect enc0:3` Displays detailed information on a specific interconnect module in interconnect bay 3 of the primary enclosure

ldap

Manage Virtual Connect directory server authentication settings.

Supported actions: `help, set, show`

Item	Description
`set ldap`	Modify the Virtual Connect directory server settings

Syntax	`set ldap [Enabled=<true|false>]`
	`[LocalUsers=<enabled|disabled>]`
	`[NtAccountMapping=<enabled|disabled>]`
	`[TargetDomain=<domainName>] [IpAddress=<ipAddress>]`
	`[SslPort=<portNum>] [SearchContext1=<string>]`
	`[SearchContext2=<string>] [SearchContext2=<string>]`

Properties:	
`Enabled`	Enables or disables directory authentication. Valid values include "true" and "false".

Item	Description
LocalUsers	Enables or disables local user authentication. Valid values include "Enabled" and "Disabled". WARNING: Disabling local users without correctly configuring LDAP authentication first may result in not being able to log on.
NtAccountMapping	Enables or disables Microsoft® Windows NT® account mapping. This capability allows you to enter "domain\username". Valid values include "Enabled" and "Disabled".
TargetDomain	The target domain name. The maximum length is 64 characters.
IpAddress	The IP address or DNS name of the directory server
SslPort	The port to use for LDAP communication. Valid values include a valid port number between 1 and 65535. The default port number is 636.
SearchContext1	First searchable path used to locate the user when the user is trying to authenticate using directory services.
SearchContext2	Second searchable path used to locate the user when the user is trying to authenticate using directory services.
SearchContext3	Third searchable path used to locate the user when the user is trying to authenticate using directory services.
Example	`->set ldap LDAP=enabled IpAddress=192.168.0.124` Enables directory services authentication for users

Item	Description
show ldap	Display LDAP information
Syntax	`show ldap`
Example	`->show ldap`

ldap-group

Manage Virtual Connect directory groups.

Supported actions: `add, help, remove, set, show`

Item	Description
add ldap-group	Add a new directory group to the directory services configuration
Syntax	`add ldap-group <GroupName> [Description=<string>] [Privileges=domain,server,network,storage]`
Example	`->add ldap-group MyNewGroup Description="Test Group" Privileges=domain,server` Adds a new directory group

Item	Description
remove ldap-group	Remove an existing directory group
Syntax	`remove ldap-group <GroupName>`
Example	`->remove ldap-group MyGroup` Removes a directory group

Item	Description
set ldap-group	Modify the properties of an existing directory group
Syntax	set ldap-group <GroupName> [Description=<description>] [Privileges=<privileges>]
Parameters:	
GroupName	The name of an existing group to modify
Properties:	
Description	A user-friendly description for the group
Privileges	A set of one or more privileges for the group. Valid values include any combination of "domain","server","network", and "storage".
Example	->set ldap-group MyGroup Description="Test Group" Privileges=domain,server,network

Modifies a directory group description and privileges |

Item	Description
show ldap-group	Display the existing directory groups
Syntax	show ldap-group
Example	->show ldap-group

Display LDAP group information |

mac-cache

Manage Ethernet MAC Cache failover settings.

Supported actions: help, set, show

Item	Description
set mac-cache	Modify Ethernet MAC Cache failover settings
Syntax	set mac-cache [Enabled=<true|false>] [Refresh=<interval>]
Properties:	
Enabled	Enables or disables MAC cache failover. Valid values include "true" and "false".
Refresh	The refresh interval for the MAC Cache (in seconds). Valid values include integers from 1-30.
Examples:	
	->set mac-cache Enabled=true

Enables MAC Cache Failover |
| | ->set mac-cache Enabled=true Refresh=10

Enables MAC Cache Failover and sets the refresh interval |

Item	Description
show mac-cache	Display Ethernet MAC Cache failover settings
Syntax	show mac-cache
Example	->show mac-cache

Displays Ethernet MAC Cache failover settings |

network

Manage Virtual Connect Ethernet networks.

Supported actions: `add, help, remove, set, show`

Item	Description
`add network`	Create a new Ethernet Network. After the network has been created, uplink ports can be added, if the network is not using a shared uplink port set.
Syntax	`add network <NetworkName> [UplinkSet=<UplinkSetName> VLanID=<VLanID>] [State=<Enabled|Disabled>] [SmartLink=<Enabled|Disabled>]`
Parameters:	
`NetworkName`	The unique name of the new network to create (required)
Properties:	
`UplinkSet`	The name of an existing shared uplink port set to use with this new network (optional). If this property is specified, then a valid VLAN ID must also be provided.
`VLanID`	The VLAN ID associated with the network (used with shared uplink port set only). The VLAN ID is a valid number between 1 and 4094.
`State`	Enables or Disables the network. Valid values are "Enabled" and "Disabled". The default value is "Enabled".
`SmartLink`	Enables or Disables the SmartLink capability for a port. Valid values are "Enabled" and "Disabled". The default value is "Disabled".
Examples:	
	`->add network MyNewNetwork` Creates a new network, and then adds it to the domain
	`->add network MyNewNetwork2 UplinkSet=MyUplinkSet VLanID=145` Creates a new network and uses a shared uplink port set
	`->add network Network1 State=Disabled SmartLink=Enabled` Creates a new network with SmartLink Enabled and Status Disabled

Item	Description
`remove network`	Remove a network from the domain
Syntax	`remove network <NetworkName | *>`
Parameters:	
`NetworkName`	The name of an existing network in the domain
Examples:	
	`->remove network MyNetwork` Removes a network
	`->remove network *` Removes all networks

Item	Description
`set network`	Modify an existing Ethernet network
Syntax	`set network <NetworkName> [Name=<NewName>] [State=<Enabled|Disabled>] [SmartLink=<Enabled|Disabled>]`

Item	Description
Parameters:	
NetworkName	The name of an existing network to modify
Properties:	
Name	The new name of the network
State	Enables or disables the network. Valid values are "Enabled" and "Disabled"
SmartLink	Enables or disables the SmartLink capability for a port
Examples:	
	->set network MyNetwork State=Disabled Disables an existing network named "MyNetwork"
	->set network Blue Name=Red Changes the name of an existing network from "Blue" to "Red"
	->set network GreenNetwork SmartLink=Enabled Enables the SmartLink feature on a specific network

Item	Description
show network	Display all Ethernet networks in the domain
Syntax	show network [<NetworkName> | *]
Examples:	
	->show network Displays a summary listing of all networks
	->show network * Displays detailed information for all networks
	->show network MyNetwork Displays detailed information for a specific network

profile

Manage server profiles.

Supported actions: add, assign, help, remove, set, show, unassign

Item	Description
add profile	Create a new server profile. After the profile has been created, the profile can then be configured using the "set" subcommand and additional network and fabric connections can also be added. The server profile can also be assigned to a device bay using the "assign" subcommand.
Syntax	add profile <ProfileName> [-NoDefaultEnetConn] [-NoDefaultFcConn]
Parameters:	
ProfileName	The unique name of the new server profile to create
Options:	
NoDefaultEnetConn	Do not add default Ethernet Network connections when creating the server profile
NoDefaultFcConn	Do not add default FC SAN connections when creating the server profile

Item	Description
Examples:	
	`->add profile MyNewProfile` Creates a new profile and adds it to the domain, using default connections
	`->add profile MyNewProfile2 -NoDefaultEnetConn` Creates a new profile without adding default Ethernet connections
	`->add profile MyNewProfile2 -NoDefaultFcConn` Creates a new profile without adding default FC connections
	`->add profile MyNewProfile2 -NoDefaultEnetConn -NoDefaultFcConn` Creates a new profile without adding default Ethernet and FC connections

Item	Description
`assign profile`	Assign a server profile to a device bay
Syntax	`assign profile <ProfileName> <DeviceBay>`
Parameters:	
`ProfileName`	The unique name of the server profile to assign
`DeviceBay`	The device bay to assign the profile to, in the format: `EnclosureID:DeviceBayNumber` If EnclosureID is not specified it defaults to the local enclosure
Example	`->assign profile MyProfile1 enc0:1` Assigns a profile to device bay 1 of the primary enclosure

Item	Description
`remove profile`	Remove one or more server profiles from the domain
Syntax	`remove profile <ProfileName	*>`
Examples:	
	`->remove profile MyProfile` Removes a server profile by name
	`->remove profile *` Removes all server profiles

Item	Description
`set profile`	Modify properties of an existing server profile
Syntax	`set profile <ProfileName> Name=<NewName>`
Parameters:	
`ProfileName`	The current name of the profile to modify
Properties:	
`Name`	The new name of the server profile
Example	`->set profile MyProfile Name=MyNewProfileName` Changes the name of a server profile

Item	Description
`show profile`	Display all server profiles that exist in the domain
Syntax	`show profile [<ProfileName>	*]`
Examples:	
	`->show profile` Displays a summary listing of all server profiles
	`->show profile *` Displays detailed information for all profiles
	`->show profile MyProfile` Displays detailed information for a specific profile

Item	Description
`unassign profile`	Unassign a server profile from a device bay
Syntax	`unassign profile <ProfileName>`
Parameters:	
`ProfileName`	The name of a server profile that is currently assigned to a device bay
Example	`->unassign profile MyProfile1` Unassigns a server profile from a device bay

server

Manage server blades.

Supported actions: `help, poweroff, poweron, reboot, show`

Item	Description
`poweroff server`	Power off one or more physical servers
Syntax	`poweroff server [<ServerID>	*] [-Force	-ForceOnTimeout] [-timeout=<timeout>]`
Parameters:	
`ServerID`	The reference ID of a physical server in the domain. The format of the server ID is `<EnclosureID:DeviceBay>` If the Enclosure ID is not provided, then the primary or local enclosure is used by default.
Options:	
`Force`	Forces a power off operation without waiting for the OS to shutdown gracefully. This option should only be used as a last resort because it can potentially cause data loss on the server.
`ForceOnTimeout`	Attempts a graceful power down, but if the server does not shutdown within the timeout period (default is 60 seconds), then the server will be forced to power off.
`Timeout`	Specifies the timeout period (in seconds) to wait for the operation to complete (per server). The default timeout is 60 seconds.
Examples:	

Item	Description
	->poweroff server enc0:2 Shuts down a specific server in device bay 2 of an enclosure with ID enc0
	->poweroff server enc0:2 -Force Forces a power off operation on a specific server (primary/local enclosure)
	->poweroff server * Powers off all servers in the domain
	->poweroff server enc0:* Powers off all servers in a specific enclosure
	->poweroff server enc0:2 -ForceOnTimeout Attempts a graceful poweroff, but forces a shutdown if not completed within timeout period
	->poweroff server * -timeout=180 Shuts down all servers and specifies a custom timeout of 3 minutes

Item	Description
poweron server	Power on one or more physical servers
Syntax	poweron server [<ServerID> | *] [-timeout=<timeout>]
Parameters:	
ServerID	The reference ID of a server in the domain. The format of the server ID is <EnclosureID:DeviceBay>
Options:	
Timeout	The timeout period (in seconds) to wait for the operation to complete. The default timeout is 60 seconds.
Examples:	
	->poweron server 2 Powers on the specific server in bay 2 of the primary enclosure
	->poweron server * Powers on all servers in the domain
	->poweron server enc0:* Powers on all servers in a specific enclosure

Item	Description
reboot server	Reboot one or more physical servers
Syntax	reboot server [<ServerID>|*] [-Force] [-ForceOnTimeout] [-timeout=<timeout>
Parameters:	
ServerID	The reference ID of a server in the domain. The format of the server ID is <EnclosureID:DeviceBay>. If the Enclosure ID is not provided, then the primary or local enclosure (enc0) is used by default.
Options:	
Force	Forces a reboot operation without waiting for the OS to shutdown gracefully. This option should only be used as a last resort because it can potentially cause data loss on the server.

Item	Description
ForceOnTimeout	Attempts a graceful power down, but if the server does not shutdown within the timeout period (default is 60 seconds), then the server will be forced to reboot.
Timeout	Specifies the timeout period (in seconds) to wait for the operation to complete (per server). The default timeout is 60 seconds.
Examples:	
	->reboot server 2 Reboots the specific server in device bay 2 of the primary enclosure
	->reboot server enc0:2 -force Reboots a server using the force option
	->reboot server * -ForceOnTimeout -timeout=180 Reboots all servers using the ForceOnTimeout option and a custom timeout
	->reboot server * Reboots all servers in the domain
	->reboot server enc0:* Reboots all servers in a specific enclosure

Item	Description
show server	Display all servers in the domain
Syntax	show server [<ServerID> | *]
Parameters:	
ServerID	The reference ID of a server in the domain. The format of the server ID is <EnclosureID:Bay>
Examples:	
	->show server Displays a summary listing of all servers
	->show server * Displays detailed information for all servers
	->show server enc0:4 Displays detailed information for the specific server in device bay 4 of an enclosure named "MyEnclosure"

stackinglink

Display stacking link information and status.

Supported actions: help, show

Item	Description
show stackinglink	Display stacking links and their status
Syntax	show stackinglink
Example	->show stackinglink Displays a summary listing of all stacking links and status

status

View overall domain status information.

Supported actions: `help, show`

Item	Description
`show status`	Display the status of the domain and all components in the domain
Syntax	`show status`
Example	`->show status` Displays domain status information

systemlog

View Virtual Connect Manager system event log.

Supported actions: `help, show`

Item	Description
`show systemlog`	Display the Virtual Connect manager system log
Syntax	`show systemlog`
Example	`->show systemlog` Displays the system log

uplinkport

Manage interconnect module uplink ports.

Supported actions: `add, help, remove, set, show`

Item	Description
`add uplinkport`	Add a new uplink port to an existing network or a shared uplink port set
Syntax	`add uplinkport <PortID> [Network=<NetworkName> | UplinkSet=<UplinkSet>] [Speed=<Auto|10Mb|100Mb|1Gb|Disabled>]`
Parameters:	
`PortID`	The ID of an uplink port to add (required). The name is actually a combination of the enclosure name, interconnect bay, and port number in a single descriptor. The format of the port name is `"<EnclosureID>:<InterconnectBay>:<PortNumber>"`. If Enclosure ID is not specified, it defaults to the local enclosure.
Properties:	
`Network`	The name of an existing network to which the port is added
`UplinkSet`	The name of an existing shared uplink port set to which the port is added
`Speed`	Specifies the port speed for the port (optional). Acceptable values include Auto, 10Mb, 100Mb, 1Gb, and Disabled. If not specified, the default port speed is "Auto".
Examples:	

Item	Description
	->add uplinkport enc0:1:1 Network=MyNetwork
	Adds a new uplink port (Bay 1, Port 1) to a network
	->add uplinkport enc0:2:4 Network=MyNetwork Speed=1Gb
	Adds a new uplink port (Bay 2, Port 4) to a network and sets the port speed
	->add uplinkport enc0:2:3 UplinkSet=MyUplinkSet
	Adds a new uplink port (Bay 2, Port 3) to a shared uplink port set

Item	Description
remove uplinkport	Remove an uplink port element from a network or a shared uplink port set
Syntax	remove uplinkport <PortID> [Network=<NetworkName> | UplinkSet=<UplinkSetName>]
Parameters:	
PortID	The name of the port to remove from a network. (required). The port name must be in the following format: <EnclosureID>:<InterconnectBayNumber>:<PortNumber> If EnclosureID is not specified, it defaults to the local enclosure.
Network	The name of the network from which the port is removed
UplinkSet	The name of the shared uplink port set from which the port is removed
Examples:	
	->remove uplinkport enc0:1:2 Network=MyNetwork
	Removes a specific uplink port (Bay 1, Port 2) from a network
	->remove uplinkport * Network=BlueNetwork
	Removes all uplink ports from a network named "BlueNetwork"
	->remove uplinkport enc0:2:3 UplinkSet=SharedUplinkSet1
	Removes a specific uplink port (Bay 2, Port 3) from a shared uplink set

Item	Description
set uplinkport	Modify an uplink port that exists as a member of a network or shared uplink port set
Syntax	set uplinkport <PortID> [Network=<NetworkName> | UplinkSet=<UplinkSetName>] Speed=<Auto|10Mb|100Mb|1Gb|Disabled>
Parameters:	
PortID	The name of the port to modify (required). The specified port must already be added to a network or uplink port set. The port name is in the format: <EnclosureID>:<BayNumber>:<PortNumber>
Properties:	
Network	The name of the network to which the port belongs
UplinkSet	The name of the shared uplink port set to which the port belongs
Speed	Specifies the port speed for the port. Acceptable values include Auto, 10Mb, 100Mb, 1Gb, and Disabled.
Examples:	
	->set uplinkport enc0:1:2 Network=MyNetwork Speed=1Gb
	Changes the port speed of a network port

Item	Description
	`->set uplinkport enc0:2:1 Network=MyNetwork Speed=Disabled` Disables a specific port that belongs to a network

	`->set uplinkport enc0:2:4 UplinkSet=MyUplinkSet`
	`Speed=Disabled`
	Disables a specific port that belongs to a shared uplink set

Item	Description
`show uplinkport`	Display all Ethernet module uplink ports
Syntax	`show uplinkport`
Example	`->show uplinkport` Displays all uplink ports

uplinkset

Manage shared uplink port sets

Supported actions: `add, help, remove, set, show`

Item	Description
`add uplinkset`	Create a new shared uplink port set
Syntax	`add uplinkset <UplinkSetName>`
Parameters:	
`UplinkSetName`	The unique name of the new shared uplink port set to create (required)
Example	`->add uplinkset MyNewUplinkSet` Creates a new shared uplink port set and adds it to the domain

Item	Description
`remove uplinkset`	Remove a shared uplink port set from the domain
Syntax	`remove uplinkset <UplinkSetName>`
Parameters:	
`UplinkSetName`	The name of an existing shared uplink port set
Example	`->remove uplinkset MyUplinkSet` Removes a shared uplink port set

Item	Description
`set uplinkset`	Modify an existing shared uplink port set
Syntax	`set uplinkset <UplinkSetName> [Name=<NewName>]`
Parameters:	
`UplinkSetName`	The name of an existing shared uplink set to modify
Properties:	
`Name`	The new name of the shared uplink set
Example	`->set uplinkset Blue Name=Red` Changes the name of an shared uplink set from "Blue" to "Red"

Item	Description
`show uplinkset`	Display shared uplink configurations
Syntax	`show uplinkset [<UplinkSetName>	*]`
Examples:	
	`->show uplinkset` Displays a summary listing of all uplink sets
	`->show uplinkset *` Displays detailed information for all shared uplink sets
	`->show uplinkset MyNetwork` Displays detailed information for a specific shared uplink set

user

Manage local domain user configurations.

Supported actions: `add, help, remove, set, show`

Item	Description
`add user`	Create a new user and add it to the Virtual Connect Manager database
Syntax	`add user <username> Password=<password> [<optional user properties>]`
Properties:	
`Password`	The password of the new user. The password of the new user can be entered as clear text in the command or as a masked string at the prompt.
`FullName`	The full name of the user (optional)
`ContactInfo`	Contact information for the user (optional)
`Enabled`	Enables or disables the user [true	false] (optional)
`Privileges`	The allowed privileges for the user (optional). Privileges can be any combination of "domain", "server", "network", or "storage" separated by commas.
Examples:	
	`->add user steve Password=fgY87hHl` Adds a new user by specifying the minimal amount of properties

	`->add user bill Password=HGtwf7272562`
	`Privileges="domain,network" FullName="Bill Johnson"`
	`ContactInfo=billj@company.com Enabled=true`
	Adds a new user and configures additional user properties

	`->add user Admin Password=hjkhfd Privileges=*` Adds an "Admin" user with all privileges

Item	Description
`remove user`	Remove a user from the Virtual Connect Manager database
Syntax	`remove user <username>`
Examples:	

Item	Description
	`->remove user steve` Removes a specific user by name
	`->remove user *` Removes all users

Item	Description
`set user`	Modify attributes of an existing user
Syntax	`set user <username> [<one or more user properties>]`
Properties:	
`UserName`	The new name of the user
`Password`	The new password of the user can be entered as clear text in the command or as a masked string at the prompt. If the Password value is blank, the user is prompted to enter the password at the prompt.
`FullName`	The full name of the user
`ContactInfo`	Contact information for the user
`Enabled`	Enables or disables the user [true | false]
`Privileges`	The allowed privileges for the user (optional). Privileges can be any combination of "domain", "server", "network", "storage" separated by commas.
Examples:	
	`->set user steve Password=fgY87hHl` Modifies an existing user's password
	`->set user steve Password` Modifies an existing user's password, masked, at the prompt

	`->set user bill Password=HGtwf7272562`
	`Privileges="domain,network" FullName="Bill Johnson"`
	`ContactInfo=billj@company.com Enabled=true`
	Modifies several properties of an existing user

	`->set user tom privileges=*` Gives a user all privileges

Item	Description
`show user`	Display user summary or user details
Syntax	`show user [<username>]`
Properties:	
`Privileges`	The allowed privileges for the user, which can be any combination of "domain", "server", "network", or "storage" separated by commas
`FullName`	The full name of the user
`ContactInfo`	Contact information for the user
`Enabled`	Specifies if the user is enabled or disabled
Examples:	
	`->show user` Displays a listing of all existing users

Item	Description
	`->show user steve` Displays details of an existing user by name
	`->show user *` Displays details of all existing users

vcm

Reset the Virtual Connect Manager.

Supported actions: `help, reset`

Item	Description
`reset vcm`	Reset the Virtual Connect Manager. A failover to the standby VCM may also be specified (optional), if there is a standby VCM available. **IMPORTANT:** Resetting the VCM causes a temporary loss in connectivity with the Virtual Connect Manager. If failover is specified and there is a standby VCM, users are logged off and must reconnect using the standby VCM IP address.
Syntax	reset vcm [-failover]
Examples:	
	`->reset vcm` Resets the Virtual Connect Manager
	`->reset vcm -failover` Resets the Virtual Connect Manager and forces a failover to the standby VCM (if available)

version

Display CLI version information.

Supported actions: `help, show`

Item	Description
`show version`	Display CLI version information
Syntax	`show version`
Example	`->show version` Displays CLI version and copyright information

Help subsystem

The help subsystem consists of three options:

- **Help summary**—lists all supported actions and a short description of each:
  ```
  >help (or ?)
  add          add an element to an existing object
  assign       assign a server profile to a device bay
  ```

```
   . . .
```

- **Subcommand help**—displays help details associated with a specific subcommand, including supported managed elements:

```
>assign -help (or assign ?)
assign a server profile to a device bay

Managed Elements:
profile

Examples:
assign profile MyProfile enc0:1
```

- **Management element help**—provides a listing of objects that are supported with a specific subcommand and a brief description of the management element and what it represents in the management model:

```
->help devicebay

General Enclosure Device Bay settings and information

Supported Subcommands:
help
show


-------------------------------------------------------------------------

->show devicebay -help

Description:

  This command displays all device bays in the domain

Syntax:

  show devicebay [<DeviceBayName> | *]

Parameters:

  DeviceBayName : The reference name of a device bay in the domain.
                  The format of the device bay name is
              <EnclosureID:DeviceBay>

Examples:

  - Display a summary listing of all device bays:
    ->show devicebay

  - Show detailed information for all device bays:
```

```
                    ->show device bay *

           -  Show detailed information for a specific device bay 2 of
              a specific enclosure:
              ->show devicebay enc0:2
```

Output format

The CLI provides two different output formats:

- Interactive user output format
- Scriptable output format

The interactive user output format is the default. However, by using a command-line option, the user can also specify a "parse-friendly" output format, which provides data in a format that can be easily interpreted by automated scripts invoking the CLI. The different output formats primarily impact the show subcommand in the CLI infrastructure, where a majority of the informational details are displayed.

Interactive user output format

The interactive user output format provides a user friendly view of information at the command line. When providing an overview, or listing, of several instances of data, a tabular text format is displayed. If an individual instance of data is being displayed, then the stanza format is used.

Example 1: Tabular text output format for displaying a user list

```
->show user

===============================================================================
UserName          Privileges FullName              ContactInfo          Enabled
===============================================================================
Administrator     domain     Steve Johnson         steve.johnson@hp.com true
                  server
                  network
                  storage
-------------------------------------------------------------------------------
Admin             domain     Admin                 Admin                true
                  server
                  network
                  storage
-------------------------------------------------------------------------------
steve             domain     Steve Johnson         steve.johnson@hp.com true
                  server
                  network
                  storage
-------------------------------------------------------------------------------
```

```
brad            domain      Brad Mills          brad.mills@hp.com    true
                server
------------------------------------------------------------------------------
jim             network     Jimmy Joe           jimmy.joe@hp.com     true
------------------------------------------------------------------------------
alice           storage     Alice Candle        alice.candle@hp.com false
------------------------------------------------------------------------------
```

Example 2: Stanza output format for displaying a single user instance

```
->show user steve
UserName    : steve
Privileges  : domain,server,network,storage
FullName    : Steve Johnson
ContactInfo : steve.johnson@hp.com
Enabled     : true
```

Example 3: Stanza output format for displaying all user details

```
->show user *
UserName    : Administrator
Privileges  : domain,server,network,storage
FullName    : Steve Johnson
ContactInfo : steve.johnson@hp.com
Enabled     : true


UserName    : Admin
Privileges  : domain,server,network,storage
FullName    : Admin
ContactInfo : Admin
Enabled     : true


UserName    : steve
Privileges  : domain,server,network,storage
FullName    : Steve Johnson
ContactInfo : steve.johnson@hp.com
Enabled     : true


UserName    : brad
Privileges  : domain,server
FullName    : Brad Mills
ContactInfo : brad.mills@hp.com
Enabled     : true


UserName    : jim
Privileges  : network
FullName    : Jimmy Joe
ContactInfo : jimmy.joe@hp.com
Enabled     : true
```

```
UserName    : alice
Privileges  : storage
FullName    : Alice Candle
ContactInfo : alice.candle@hp.com
Enabled     : false
```

Scriptable output format

Scriptable output format allows scripts to invoke CLI commands and receive command responses that can be easily parsed by the scripts. This capability is provided by two options that are available: -output=script1 and -output=script2. These options are described in more detail below. To display output with no headers or labels, use no-headers as an additional output option value.

> **IMPORTANT:** If the delimiter is present within the data, then the entire value is surrounded by double quotes.

- **Script1 Output Format**

  The script1 output format can be used to format the output using a name-value pair format, using an equal sign as the delimiter. All text on the left side of the equal sign designates the "name" of a property, and the text on the right side of the equal sign designates the "value" of the property. If "no-headers" is provided as an additional option value, only the values are displayed. Each property is displayed on a separate line.

- **Script2 Output Format**

  The script2 output format can be used to format all instance data in a single line, using a semi-colon as the delimiter for the data. The first line contains the property names. This format is consistent with a "table view" of the data, where the first line is represented by a list of column labels, while the remaining lines provide the actual data being displayed. Each line represents a single instance of data. For example, in the case of showing users, each line provides all data corresponding to a single user instance.

The following examples provide some common scenarios for using the script output format options.

Example 1: Scriptable output format displaying all enclosures

```
->show enclosure -output=script1
ID=enc0
Name=Enclosure1
Import Status=Imported
Serial Number=USE0000BK2
Part Number=403321-021
Asset Tag=OA ASSET 453
```

Example 2: Scriptable output format displaying user "Administrator" information

```
->show user Administrator -output=script1
User Name=Administrator
Privileges=domain,server,network,storage
Full Name=
Contact Info=
Enabled=true
```

Example 3: Scriptable output format displaying all users (with table header)

```
->show user -output=script2

UserName;Privileges;FullName;ContactInfo;Enabled

Administrator;domain,server,network,storage;Steve
Johnson;steve.johnson@hp.com;true

Admin;domain,server,network,storage;Admin;Admin;true

steve;domain,server,network,storage;Steve
Johnson;steve.johnson@hp.com;true
```

Example 4: Scriptable output format displaying all users (no table header)

```
->show user -output=script2,no-headers

Administrator;domain,server,network,storage;Steve
Johnson;steve.johnson@hp.com;true

Admin;domain,server,network,storage;Admin;Admin;true

steve;domain,server,network,storage;Steve
Johnson;steve.johnson@hp.com;true
```

Example 5: Scriptable output format displaying a single user (with table header)

```
->show user steve -output=script2

UserName;Privileges;FullName;ContactInfo;Enabled

steve;domain,server,network,storage;Steve
Johnson;steve.johnson@hp.com;true
```

Example 6: Scriptable output format displaying a single user (no table header)

```
->show user steve -output=script2,no-headers

steve;domain,server,network,storage;Steve
Johnson;steve.johnson@hp.com;true
```

Configuring the Virtual Connect domain using the CLI

Basic configuration

A Virtual Connect domain consists of an enclosure and a set of associated modules and server blades that are managed together by a single instance of the Virtual Connect Manager. The Virtual Connect domain contains specified networks, server profiles, and user accounts that simplify the setup and administration of server connections. Establishing a Virtual Connect domain enables administrators to upgrade, replace, or move servers within their enclosures without changes being visible to the external LAN/SAN environments.

Before getting started, perform the following tasks:

- Verify that the HP Onboard Administrator is running the latest firmware (must be at least v1.30 or later).

- Locate the Default Network Settings label attached to the HP 1/10Gb VC-Enet module in interconnect module bay 1 and note the following information:
  - o DNS name
  - o User name
  - o Password

- Connect any Ethernet module stacking cables

> **IMPORTANT:** After a CLI command is issued, it can take up to 90 seconds before configuration changes are stored in persistent memory. Disruptive actions such as powering cycling an I/O module within this time window can result in lost configuration changes.

The following sections provide the necessary steps to set up a basic domain.

For detailed information on a particular command, see "Managed elements (on page 9)."

Logging in to the CLI

The Virtual Connect Manager CLI can be accessed remotely through any SSH session ("Remote access to the Virtual Connect Manager" on page 8):

- SSH
  ```
  >ssh 192.168.0.120
  login as: Administrator
  password:
  ```

- Local User Authentication using default Administrator login credentials
  ```
  >ssh 192.168.0.120
  login as: Administrator
  ```

```
        password: <Default Administrator login credentials>
```
- LDAP Authentication
```
>ssh 192.168.0.120
login as: <LDAP user>
password: <password>
```

Domain setup

A Virtual Connect domain consists of an enclosure and a set of associated modules and server blades that are managed together by a single instance of the Virtual Connect Manager. the Virtual Connect domain contains specified networks, server profiles, and user accounts that simplify the setup and administration of server connections. Establishing a Virtual Connect domain enables administrators to upgrade, replace, or move servers within their enclosures without changes being visible to the external LAN/SAN environments.

Before getting started, perform the following tasks:

- Verify that the Onboard Administrator is running the latest firmware (must be at least v1.30 or later).
- Locate the Default Network Settings label attached to the HP 1/10Gb VC-Enet Module in interconnect module bay 1 and note the following information:
  - o DNS name
  - o User name
  - o Password
- Connect any Ethernet module stacking cables

After logging in, perform the following tasks to setup the domain:

1. Import the enclosure.
2. Name the domain.
3. Set up local user accounts and privileges.

Importing an enclosure

Enter OA credentials during import:
```
>import enclosure username=Administrator password=myPassword
```
or
```
>import enclosure username=Administrator
Password=*****
```

Setting the domain name

To set the domain name, use the `set domain` command:
```
>set domain name=MyNewDomainName
```

The Virtual Connect domain name must be unique within the data center, and can be up to 64 characters without spaces or special characters.

Configuring local users

- Add a new user

```
>add user bob password=fhkjdhfk privileges=domain,network
```

- Modify an existing user

```
>set user bob fullname="Bob J Smith" enabled=false
```

- Remove an existing user

```
>remove user bob
```

- Remove all local users except for the Administrator account

```
>remove user *
```

Display local users:

- Summary display

```
>show user
```

- Detailed display

```
>show user *
```

- Displaying info on a single user

```
>show user steve
```

Up to 32 local user accounts can be created.

Each account can be set up to have a combination of up to four access privileges:

- Domain
    - Define local user accounts, set passwords, define roles
    - Import enclosures
    - Name the VC domain
    - Set the domain IP address
    - Update firmware
    - Administer SSL certificates
    - Delete the VC domain
    - Save configuration to disk
    - Restore the configuration from a backup
- Networking
    - Configure network default settings
    - Select the MAC address range to be used by the VC domain
    - Create, delete, and edit networks
    - Create, delete, and edit shared uplink sets
- Server
    - Create, delete, and edit server Virtual Connect profiles
    - Assign and unassign profiles to device bays
    - Select and use available networks
    - Power on and off server blades within the enclosure
- Storage
    - Select the WWNs to be used by the domain
    - Setup the connections to the external FC Fabrics

It is possible to create a user with no privileges. This user can only view status and settings.

> **NOTE:** The vcmuser_ account is an internal Onboard Administrator account created and used by Virtual Connect Manager to communicate with the Onboard Administrator. This account can show up in the Onboard Administrator system log. This account cannot be changed or deleted.

Configuring LDAP authentication support for users

- Set LDAP properties

  ```
  >set ldap ipaddress=192.168.0.110 enabled=true
  ```

- Add/Remove LDAP directory groups

  ```
  >add ldap-group MyNewGroup description="This is my test group"
  privileges=domain,server,network
  ```

- Enable/Disable local users

  ```
  >set ldap localusers=disabled
  ```

- Display LDAP settings and directory groups

  ```
  >show ldap
  >show ldap-group
  ```

Network setup

To establish external Ethernet network connectivity for the HP BladeSystem c-Class enclosure, do the following:

1. Identify the MAC addresses to be used on the server blades deployed within this Virtual Connect domain.
2. Setup connections from the HP BladeSystem c-Class enclosure to the external Ethernet networks.

   These connections can be uplinks dedicated to a specific Ethernet network or shared uplinks that carry multiple Ethernet networks with the use of VLAN tags.

Configuring MAC Address ranges

- Use VC-Defined MAC addresses

  ```
  >set domain MacType=VC-Defined MacPool=10
  ```

- Use factory-default MAC addresses

  ```
  >set domain MacType=Factory-Default
  ```

- Set user-defined MAC addresses

  ```
  >set domain MacType=User-Defined MacStart=00-17-A4-77-00-00 MacEnd=00-
  17-A4-77-00-FF
  ```

> **IMPORTANT:** Configuring Virtual Connect to assign server blade MAC addresses requires careful planning to ensure that the configured range of MAC addresses is used once within the environment. Duplicate MAC addresses on an Ethernet network can result in a server network outage.

Each server blade Ethernet NIC ships with a factory default MAC address. The MAC address is a 48-bit number that uniquely identifies the Ethernet interface to other devices on the network. While the hardware ships with default MAC addresses, Virtual Connect has the ability to assign MAC addresses that will

override the factory default MAC addresses while the server remains in that Virtual Connect enclosure. When configured to assign MAC addresses, Virtual Connect securely manages the MAC addresses by accessing the physical NICs through the enclosure Onboard Administrator and the iLO interfaces on the individual server blades.

Always establish control processes to ensure that a unique MAC address range is used in each Virtual Connect domain in the environment. Reusing address ranges could result in server network outages caused by multiple servers having the same MAC addresses.

If using Virtual Connect assigned MAC addresses, the following notes apply:

- Virtual Connect automatically reserves both a primary address and an iSCSI MAC address for use by multifunction gigabit server adapters, such as the HP NC373m PCI Express Dual Port Multifunction Gigabit server adapter. Only the primary MAC address is used by standard (not multifunction) Ethernet devices.

- If a server blade is moved from a Virtual Connect managed enclosure to a non-Virtual Connect enclosure, the local MAC addresses on that server blade are automatically returned to the original factory defaults.

- If a server blade is removed from a bay within a Virtual Connect domain and installed in another bay in the same Virtual Connect domain or in a bay in a different domain, it is assigned the new set of addresses appropriate for that server location.

Assigned MAC addresses

The MAC address range used by the Virtual connect domain must be unique within the environment. HP provides a set of pre-defined ranges that are for use by Virtual Connect Manager and will not conflict with server factory default MAC addresses.

When using the HP-defined MAC address ranges, ensure that each range is used only once within the environment.

Selecting VC-assigned MAC address ranges

When using VC-assigned MAC addresses, you can choose between using an HP pre-defined MAC address range or using a user-defined MAC address range.

- HP pre-defined MAC address range (recommended). These pre-defined ranges are reserved and will never show up as factory default on any hardware. There are 64 ranges of 1024 unique addresses to choose from. Be sure to use each range only once within a data center.

- User-defined MAC address range. To avoid potential conflict with other hardware MAC addresses in the environment, consider using a subrange of MAC addresses reserved by the IEEE for locally-administered MAC addresses. Ensure that the range does not conflict with any Ethernet device already deployed within the enterprise.

> **IMPORTANT:** If you plan to use RDP for RedHat Linux installation and also plan to use User- or HP-defined MAC addresses, you must import the enclosure before running RDP.

Select the type and range of MAC address, and then click **Next**.

> **NOTE:** After any server profiles are deployed using a selected MAC address range, that range cannot be changed until all server profiles are deleted.

Creating an enet-network

To create a new Ethernet network use the `add network` command:

```
>add network MyNetworkName
```

Modifying enet-network properties

To modify Ethernet network properties, use the `set network` command:

```
>set network MyNetworkName state=enabled name=NewName smartlink=enabled
```

Displaying enet-networks

To display Ethernet network properties, use the `show network` command:

- Summary display

```
>show network
```

- Detailed display

```
>show network *
```

- Single network display

```
> show network MyNetwork
```

Adding uplink ports to an enet-network

To add uplink ports to an existing Ethernet network, use the `add uplinkport` command:

```
>add uplinkport enc0:1:1 network=MyNetwork
>add uplinkport 1:1 network=MyNetwork
```

Modifying uplink port properties

To modify an uplink port that exists as a member of a network or shared uplink set, use the `set uplinkport` command:

```
>set uplinkport network=Network1 speed=1Gb
```

Creating a shared uplink port set

To create a shared uplink port set, use the `add uplinkset` command:

```
>add uplinkset MyUplinkSetName
```

A shared uplink set is a way of identifying HP 1/10Gb VC-Enet module uplinks that will carry multiple networks over the same cable. In this case, each Ethernet packet carries a VLAN tag (IEEE 802.1Q) to identify the specific network to which it belongs. On shared uplinks, the VLAN tags are added when packets leave the VC-enabled enclosure and are removed when packets enter the enclosure. The external Ethernet switch and the Virtual Connect Manager must be configured to use the same VLAN tag identifier (a number between 1 and 4094) for each network on the shared uplink(s).

Virtual Connect places no special restrictions on which VLAN identifiers can be used, so the VLAN IDs already used for the networks in the data center can be used on these shared uplinks. To configure a shared uplink set for VLAN tagging, obtain a list of the network names and their VLAN IDs.

A shared uplink set enables multiple ports to be included to support port aggregation and link failover with a consistent set of VLAN tags.

Because VLAN tags are added or removed when Ethernet packets leave or enter the VC-Enet shared uplink, the VLAN tags have no relevance after the Ethernet packet enters the enclosure.

> **IMPORTANT:** If you are deploying a server where VLAN tags will be used (added) on the server itself, do not connect the server Ethernet port carrying VLAN-tagged traffic to a shared uplink set.

Identifying an associated network as the native VLAN causes all untagged incoming Ethernet packets to be placed onto this network. Only one associated network can be designated as the native VLAN. All out-going Ethernet packets are VLAN tagged.

Displaying shared uplink port sets

- Summary display
  ```
  >show uplinkset
  ```
- Detailed display
  ```
  >show uplinkset *
  ```
- Single uplinkset display
  ```
  >show uplinkset MyUplinkSetName
  ```

Adding uplink ports to a shared uplink port set

To add uplink ports to a shared uplink port set, use the `add uplinkport` command:
```
>add uplinkport enc0:1:2 uplinkset=MyUplinkSetName
```

Creating a network that uses a shared uplink port set

To create a network that uses a shared uplink port set, use the `add network` command:
```
>add network MyNewNetworkName uplinkset=MyUplinkSetName vlanid=156
```

Fibre Channel setup

To configure external Fibre Channel connectivity for the HP BladeSystem c-Class enclosure, do the following:

1. Identify WWNs to be used on the server blades deployed within this Virtual Connect Domain.
2. Define available SAN fabrics.

Configuring WWN address ranges

- VC-Defined
  ```
  >set domain WwnType=VC-Defined WwnPool=5
  ```
- Factory-Default
  ```
  >set domain WwnType=Factory-Default
  ```

Each server blade FC HBA mezzanine card ships with factory default port and node WWNs for each FC HBA port. Each WWN is a 64-bit number that uniquely identifies the FC HBA port/node to other devices on the network. While the hardware ships with default WWNs, Virtual Connect has the ability to assign WWNs that will override the factory default WWNs while the server remains in that Virtual Connect enclosure. When configured to assign WWNs, Virtual Connect securely manages the WWNs by

accessing the physical FC HBA through the enclosure Onboard Administrator and the iLO interfaces on the individual server blades.

When assigning WWNs to a FC HBA port, Virtual Connect will assign both a port WWN and a node WWN. Because the port WWN is typically used for configuring fabric zoning, it is the WWN displayed throughout the Virtual Connect user interface. The assigned node WWN is always the same as the port WWN incremented by one.

Configuring Virtual Connect to assign WWNs in server blades maintains a consistent storage identity (WWN) even when the underlying server hardware is changed. This method allows server blades to be replaced without affecting the external Fibre Channel SAN administration.

> △ **CAUTION:** To avoid storage networking issues and potential loss of data associated with duplicate WWNs on a FC SAN fabric, plan carefully when allowing Virtual Connect to assign server blade WWNs so that the configured range of WWNs is used only once within the environment.

The WWN range used by the Virtual Connect domain must be unique within the environment. HP provides a set of pre-defined ranges that are reserved for use by Virtual Connect and will not conflict with server factory default WWNs.

When using the HP-defined WWN ranges, be sure that each range is used only once within the environment.

Modifying FC fabric properties

To modify the properties of an existing FC SAN fabric, use the `set fabric` command:

```
>set fabric name=MyNewName portspeed=4Gb
```

Each HP 4Gb VC-FC module can be connected to one external FC SAN fabric. All uplinks must be on the same fabric. Use this command to:

- Name the FC SAN fabric connected to each VC-FC module.

- Set the number of uplinks to be used (1, 2, or 4).

- Select the uplink port speed to be used on each VC-FC module.

The number of enabled uplinks and the number of servers in the enclosure determines the effective oversubscription for that FC connection. For additional information on Fibre Channel mapping, see the *HP Virtual Connect for c-Class BladeSystem User Guide*.

Displaying FC fabrics

To display a list of all FC SAN fabrics, use the `show fabric` command:

```
>show fabric
```

Server Profile setup

A Virtual Connect server profile is a logical grouping of attributes related to server connectivity that can be assigned to a server blade. With the Virtual Connect v1.10 and higher, the server profile can include MAC address, PXE, and network connection settings for each server NIC port and WWN, SAN fabric connection, and SAN boot parameter settings for each Fibre Channel HBA port. After being defined, the server profile can be assigned to any server blade within the Virtual Connect domain. A Virtual Connect domain can have a maximum of 64 Virtual Connect server profiles.

Virtual Connect v1.20 adds the ability to configure PXE settings when using either VC Assigned or factory default MAC addresses. In addition, Use BIOS is a new option for PXE, which maintains the current settings as configured by RBSU.

A new feature in Virtual Connect v1.20 is the ability to override the Virtual Connect assigned MACs and/or WWNs when creating a new profile.

When a server profile is assigned to a server blade, the Virtual Connect Manager securely connects to the server blade, configures the NIC ports with the appropriate MAC addresses and PXE settings, and configures the FC HBA ports with the appropriate WWNs and SAN boot settings. In addition, the Virtual Connect Manager automatically connects the server blade Ethernet and Fibre Channel ports to the specified networks and SAN fabrics. This server profile can then be re-assigned to another server blade as needed, while maintaining the server's network and SAN identity and connectivity.

The Virtual Connect Manager can be configured so that server blades use server factory default MACs/WWNs or Virtual-Connect-administered MACs/WWNs. These administered values override the default MAC addresses and WWNs when a server profile is assigned to a server, and appear to pre-boot environments and host operating system software as the hardware addresses. To use administered MAC addresses, select a range of HP pre-defined or user-specified MAC addresses.

Be sure to review the following list of guidelines before creating and deploying server profiles:

- The server blade firmware and option card firmware must be at a revision that supports Virtual Connect profile assignment. See the HP website (http://www.hp.com/go/bladesystemupdates).

- Before creating the first server profile, select whether to use moveable, administered MAC addresses and WWNs or whether to use the local server blade factory default MAC addresses and WWNs.

- After an enclosure is imported into a Virtual Connect domain, server blades remain isolated from the networks and SAN fabrics until a server profile is created and assigned.

- Server blades must be powered off to receive (or relinquish) a server profile assignment when using Virtual Connect-administered MAC addresses, WWNs, or changing Fibre Channel boot parameters.

- FC SAN Connections are only shown in server profile screens when there is an HP Virtual Connect Fibre Channel Module in the enclosure managed by Virtual Connect. FC SAN Connections are added in pairs and cannot be deleted. If an HP Virtual Connect Fibre Channel Module is added to a Virtual Connect domain that has existing profiles, an option to add FC connections appears in the existing profiles when editing.

- Some server profile SAN boot settings (controller boot order) are only applied by Virtual Connect after the server blade has been booted at least once with the final mezzanine card configuration.

- If PXE, controller boot order, or SAN boot settings are made outside of Virtual Connect (using RBSU or other configuration tools), Virtual Connect will restore the settings defined by the server profile after the server blade completes the next boot cycle.

- If using a QLogic HBA with some versions of Linux (RHEL3, RHEL4, SLES9, and SLES10), the HBA connection type must be set to "point to point only" in the adapter configuration settings in the QLogic BIOS utility or QLogic OS utility (if available). If the HBA settings are not changed, the HBA may be unable to log into the fabric and discover devices on the SAN.

Server profiles are associated with a specific enclosure device bay. After a profile is assigned, the Virtual Connect Manager configures the server blade in that device bay with the appropriate MAC/PXE/WWN/SAN boot settings and connects the appropriate networks and fabrics. Server blades that have been assigned a profile and remain in the same device bay do not require further Virtual Connect Manager configuration during server or enclosure power cycle. They will boot and gain access to the network and fabric when the server and interconnect modules are ready.

If a server blade is inserted into a device bay already assigned a server profile, Virtual Connect Manager automatically updates the configuration of that server blade before it is allowed to power up and connect to the network.

If a server blade is moved from a Virtual Connect managed enclosure to a non-Virtual Connect enclosure, local MAC addresses and WWNs are automatically returned to the original factory defaults. This feature prevents duplicate MAC addresses and WWNs from appearing in the data center because of a server blade redeployment.

> **NOTE:** If you are using server factory default MAC addresses WWNs and default Fibre Channel boot parameters, you do not have to power off a server to make any profile changes. If you are using HP assigned or user assigned MAC addresses or WWNs, you must power a server off when moving a profile to the server or away from the server.

Creating server profiles

To create a new server profile, use the `add profile` command:

```
>add profile MyProfile
```

After an enclosure is imported into a Virtual Connect domain, server blades that have not been assigned a server profile are isolated from all networks to ensure that only properly configured server blades are attached to data center networks.

A server profile can be assigned and defined for each device bay so that the server blade can be powered on and connected to a deployment network. These profiles can then later be modified or replaced by another server profile.

A server profile can also be assigned to an empty bay to allow deployment at a later date.

Adding enet-network connections to a profile

To add a new Ethernet network connection to an existing server profile, use the `add enet-connection` command:

```
>add enet-connection MyProfile network=MyNetwork pxe=enabled
```

Adding FC fabric connections to a server profile

To add a new FC SAN connection to an existing server profile, use the `add fc-connection` command:

```
>add fc-connection MyProfile fabric=SAN_5
```

Assigning a server profile to device bay 1

To assign a server profile to a specific device bay, use the `assign profile` command:

```
>assign profile MyProfile enc0:1
>assign profile MyProfile 1
```

Configuring IGMP settings

To set Ethernet IGMP snooping properties, use the `set igmp` command:

```
> set igmp enabled=true timeout=30
```

IGMP allows VC-Enet modules to monitor (snoop) the IP multicast membership activities and to configure hardware Layer 2 switching behavior of multicast traffic to optimize network resource usage. Currently only IGMP v1 and v2 (RFC2236) are supported.

The IGMP Snooping idle timeout interval is set to 260 seconds by default. This value is basically the "Group Membership Interval" value as specified by IGMP v2 specification (RFC2236). For optimum network resource usage, set the interval to match the configuration on the customer network's multicast router settings.

Configuring MAC cache failover settings

- To configure MAC Cache Failover Settings, use the `set mac-cache` command:
  ```
  >set mac-cache enabled=true refresh=10
  ```

- To dispaly MAC Cache Failover Settings, use the `show mac-cache` command:
  ```
  >show mac-cache
  ```

When a VC-Enet uplink that was previously in standby mode becomes active, it can take several minutes for external Ethernet switches to recognize that the c-Class server blades can now be reached on this newly-active connection. Enabling Fast MAC Cache Failover causes Virtual Connect to transmit Ethernet packets on newly-active links, which enables the external Ethernet switches to identify the new connection (and update their MAC caches appropriately.) This transmission sequence repeats a few times at the MAC refresh interval (5 seconds recommended) and completes in about 1 minute.

> **IMPORTANT:** Be sure to set switches to allow MAC addresses to move from one port to another without waiting for an expiration period or causing a lock out.

Logging out of the CLI

To log out of the CLI, use the `exit` command:
```
>exit
```

Common management operations

The following table provides the syntax for the most commonly used management operations.

For detailed information on a particular command, see "Managed elements (on page 9)."

Operation	Examples
Display general domain settings	`>show domain`
Display predefined address pools	`>show domain addresspool`

Display interconnect modules	• Summary display
	`>show interconnect`
	• Detailed display
	`>show interconnect *`
	• Single module display
	`>show interconnect enc0:2`
	`>show interconnect 4`

Display overall domain status	`>show status`

Operation	Examples
Display stacking link configuration and status	`>show stackinglink`
Display the system log	`>show systemlog`

Display a list of servers in the domain	- Summary display
	`>show server` - Detailed display
	`>show server *` - Single server display
	`>show server enc0:1`
	`>show server 2`

Display server profiles	- Summary display `>show profile` - Detailed display `>show profile *` - Single profile display `>show profile MyProfile`
Delete the domain configuration	`>delete domain`
Update interconnect module firmware	`>update firmware url=http://www.mywebserver.com/images/vc-1.20.rom`
Force a failover to the standby VC Manager	`>reset vcm - failover`

Power off server blades	`>poweroff server enc0:2`
	`>poweroff server 3`
	`>poweroff server *`

Power on server blades	`>poweron server enc0:1`
	`>poweron server 2`
	`>poweron server *`

Reset a server blade	`>reboot server enc0:4`
	`>reboot server 6`
	`>reboot server *`

Unassign a server profile from a device bay	`>unassign profile MyProfile`
Modify Ethernet network connection properties	`>set enet-connection MyProfile 1 pxe=disabled`
Modify FC fabric connections	`>set fc-connection MyProfile 2 speed=auto`

Resetting the Virtual Connect Manager

To reset the Virtual Connect Manager, use the `reset vcm` command:

```
>reset vcm
>reset vcm [-failover]
```

Administrator privileges are required for this operation.

If VC Ethernet Modules are installed in I/O bays 1 and 2 of the enclosure, the user can manually change which Virtual Connect Ethernet Module is hosting the Virtual Connect Manager through the use of this feature. The feature can also force the Virtual Connect manager to restart without switching to the

alternate Virtual Connect Ethernet module. This feature can be useful when troubleshooting the Virtual Connect manager. The network and FC processing of the Virtual Connect subsystem is not disturbed during the restart or failover of the Virtual Connect Manager.

If the command line option `-failover` is included in the `reset vcm` command and a Virtual Connect Ethernet module is available in the alternate I/O bay (I/O Bays 1 and 2 can host the Virtual Connect Manager), the command line displays the message:

```
SUCCESS: The Virtual Connect Manager is being reset. Please wait...
```

The user is logged out of the session after approximately 1 minute. An attempted login to the same Virtual Connect Ethernet Module is rejected with the message:

```
Virtual Connect Manager not found at this IP address.
```

If the user attempts to login to the alternate I/O bay, they might receive the error message during the attempted login:

```
Unable to communicate with the Virtual Connect Manager. Please retry
again later.
```

The login should succeed after the Virtual Connect Manager has restarted on this alternate Virtual Connect Ethernet module. Allow up to 5 minutes, depending on the enclosure configuration.

If the command line option `-failover` is not included in the `reset vcm` command or a Virtual Connect Ethernet module is not available in the alternate I/O bay, the command line displays the message:

```
SUCCESS: The Virtual Connect Manager is being reset. Please wait...
```

The user is logged out of the session after approximately 1 minute. If the user attempts to re-login they might receive the error message during the attempted login:

```
Unable to communicate with the Virtual Connect Manager. Please retry
again later.
```

The login should succeed after the Virtual Connect Manager has restarted. Allow up to 5 minutes, depending on the enclosure configuration.

Technical support

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For the name of the nearest HP authorized reseller:

- In the United States, see the HP US service locator webpage (http://www.hp.com/service_locator).
- In other locations, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

For HP technical support:

- In the United States, for contact options see the Contact HP United States webpage (http://welcome.hp.com/country/us/en/contact_us.html). To contact HP by phone:
  - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website (http://www.hp.com).
- In other locations, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

Acronyms and abbreviations

BIOS

Basic Input/Output System

CLI

Command Line Interface

DHCP

Dynamic Host Configuration Protocol

DNS

domain name system

FC

Fibre Channel

HBA

host bus adapter

I/O

input/output

IGMP

Internet Group Management Protocol

IP

Internet Protocol

iSCSI

Internet Small Computer System Interface

LUN

logical unit number

MAC

Media Access Control

PXE

Preboot Execution Environment

SAN

storage area network

SSH

Secure Shell

VCM

Virtual Connect Manager

WWN

World Wide Name

WWPN

worldwide port name

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